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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,976	02/15/2002	Xiangxin Bi	2950.18US02	1411

7590 07/29/2004

Patterson, Thunte, Skaar & Christensen, P.A.  
4800 IDS Center  
80 South 8th Street  
Minneapolis, MN 55402-2100

EXAMINER
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LE, HOA T

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/076,976	BI ET AL	
	Examiner	Art Unit	
	H. T. Le	1773	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. Claims 18-30 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for nanoparticles having a tendency of forming agglomerates by Van der Waals and/or electromagnetic forces, does not reasonably provide enablement for the claimed language “weakly agglomerated” which could be caused by physical/mechanical/chemical forces or means other than the two forces mentioned in the specification. In addition, the tendency of forming agglomerates of the nanoparticles does not necessarily mean that the nanoparticles exist in agglomerated form. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

Applicants argued that the description at page 18 should provide sufficient support for the claimed language “weakly agglomerated”. This is not the case for reasons set forth above.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Wiederhoft et al (US 5,840,111).<sup>1</sup>

As set forth in the previous office actions, Wiederhoft teaches rutile titanium dioxide particles having maximum value of the particle size distribution of between 1 and 10 nm. See col. 1, lines 8-11 and col. 2, and lines 52-54.

### *Response to Arguments*

2. Applicants argued that “the Wiederhoft patent does not teach how to form different forms of titanium dioxide. Specially, ... the Wiederhoft patent does not teach how to select between amorphous, anatase and rutile forms of titanium dioxide.” Selection of different forms of titanium dioxide is not relevant because the instant claims employ the language “comprising” which is an open language that permits non-specified ingredients even in major amount. The instant claims as recited do not exclude non-specified forms (such as anatase or amorphous) of titanium dioxide. In this case, the Wiederhoft reference teaches titanium dioxide particles which include “rutile titanium dioxide” (see col. 1 lines 8-11 and col. 2, lines 52-54), and thus it satisfies the claim language “comprising rutile titanium dioxide particles”.

3. Applicants further asserted that the Wiederhoft patent “does not seem to claim rutile titanium dioxide, so enablement was not evaluated with respect to this feature for the Wiederhoft patent. The Examiner has not indicated how to fill the void in the disclosure of the Wiederhoft patent.” By making this assertion, Applicants clearly ignore Wiederhoft’s

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<sup>1</sup> Copy of this reference has been provided with the previous office actions.

statement that “[f]or the purposes of the present invention, nanodisperse titanium dioxide is taken to be **rutiles**, anastase and amorphous titanium dioxide...” (col. 1, lines 8-10, *emphasis added*). If that statement does not describe “a collection of particles comprising rutile titanium dioxide particles”, what do Applicants think it says?

4. Applicants argued that the Wiederhoft reference does not teach nanoparticles that are weakly agglomerated. As discussed in the instant specification at page 18, weak agglomerates are formed from weak forces that exist between particles of small diameter, namely nano-sized particles. In this case, the particles disclosed by Wiederhoft are in the nanoscale; therefore, they necessarily possess Van der Waals and/or electromagnetic forces which induce the nanoparticles to form loose agglomerates. Therefore, this limitation “weakly agglomerated” is deemed met by inherency.<sup>2</sup>

5. Applicant's arguments filed May 3, 2004 have been fully considered but they are not persuasive for reasons set forth above.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. T. Le whose telephone number is 571-272-1511. The examiner can normally be reached on 10:00 a.m. to 6:30 p.m., Mondays to Fridays.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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<sup>2</sup> Note also the rejection to the term “weakly agglomerated” set forth above in section one.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'H. T. Le', with a stylized, cursive script.

H. T. Le  
Primary Examiner  
Art Unit 1773